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PAPERS
IN
AGRICULTURE.

AGRICULTURE.

THE Gold Medal, being the Premium offered for planting Elms, was this Session adjudged to Henry Vernon, Esq. of Hilton-Park near Woolverhampton, from whom the following Account and Certificates were received.

SIR,

I HAVE for many years planted about thirty acres of different sorts of Trees in the course of the year, and my plantations are in the most thriving state.

Ever-green Trees I transplant in the early part of August, and am perfectly convinced, by long experience, it is the most proper season to move them. I have often known gardeners, who have examined them the following year, say,

" It surely could not be possible they were moved the preceding year." The leading shoot droops on being first transplanted; but, after two or three refreshing showers, it recovers and throws forth roots, so as to make the Tree firm before winter.

With respect to the distance between my Elms, it depends on the number of other sorts of Trees that I may have to intermix with them. I plant one Tree, as near as possible, four feet from another. I intermix Scotch and Spruce Firs with all my Trees, and cut them away when they in the least are observed to injure other plants.

In the plantation below Essington Windmill, I judge the Elms may be about fifteen feet distant from each other; in one of the clumps on Essington Wood, they are, I think, forty feet distant from each other, and the others at least eighty feet, from the number of Trees mixed with them. Should your

Society consider the inclosed as entitled to their honorary premium, it will highly flatter,

Sir,

Your obedient Servant,

Henry Vernon.

Lower Wimpole-Street,
March 26, 1801.

Mr Charles Taylor,

THIS is to certify, That between the 24th of June, 1798, and the 24th of June, 1799, the following pieces of Land were planted with English Elms, from three to seven feet high.

One piece of Land, in quantity twelve acres, two roods, twenty-five perches, called the Brick-kiln Plantation, was planted with different sorts of Trees; and amongst others with English Elms. Very few died; and there are now living four thousand English Elms, which have a very healthy appearance.

The Brick-kiln Plantation was taken off a Common, called Essington Wood. It was ploughed very deep, about three months before it was planted. The soil is part of it clay, and the other part gravel: those on the latter succeed best in all respects.

Another piece of Land, called the Castle Ring, containing eleven acres, two roods, two perches, was also planted with different sorts of Trees; and amongst them were many English Elms, on which there are now living two thousand in a very thriving state.

The soil is gravel and loam. This plantation was also taken from Essington Wood Common. Nearly one half of it was ploughed very deep, in the August before it was planted; the other part was left in the state in which it was found. The trees succeed best on the ploughed part.

Both these plantations are very effectually secured against every sort of cattle, by a ditch five feet wide and three feet deep, with oak posts and double rails wound with gorse and thorns, and every where quicked with a double row of fine plants seven years old.

There is also a third plantation under Essington Wind-mill Bank, consisting of very rich light loam, and containing seven acres, two roods, eight perches, of old inclosed Land, that had not been in tillage in the memory of man. This I planted between the 24th of June, 1798, and the 24th of June, 1799, with many different kinds of Trees; amongst others, with English Elm, of which there are now living, in a very flourishing state, five thousand six hundred.

These plantations are in the liberty of Essington, and parish of Bushbury, in the county of Stafford. Witness,

Lawrence Gray.

THIS is to certify, That Henry Vernon, Esq. has planted, on the different Lands mentioned in the county of Stafford, the number of Trees specified by Mr. Lawrence Gray; that I have walked over the Plantation, with the gardener, and found the same in a very thriving state. The plantations are uncommonly and effectually well fenced and secured to grow Timber; as witness my hand, this 24th day of March, 1801.

JOHN CLARE,
Vicar of Bushbury and Essington.

The Gold Medal, or Thirty Guineas, at the option of the Candidate, being the Premium offered for planting Osiers, was this Session adjudged to Mr. Thomas Selby, of Otford Castle in Kent, from whom the following Account and Certificates were received, and who made choice of the Pecuniary Reward.

SIR,

Understanding that a Premium has been offered, by the Society for the Encouragement of Arts, &c. for planting the greatest number of acres with Osiers, I beg leave to offer myself as a Candidate for that Premium; and to lay before the Society, the mode I have adopted in planting a field of twenty-one acres. The soil is very different in quality. In some places it is a sandy loam; and, in others, a reddish clay: in some it is a sandy bog; and, in others, a black a black moory bog. The sub-soil consists of very stiff clay, and sharp reddish clay. The plants are of three sorts, the New Kind, the Osier, and the Willow. They are planted in rows two feet by one, and about 20,000 per acre. Those planted in March 1800, flourished five months after, and are in good condition at present. The land, as may be supposed from the description, is very wet; my apology for which is, that it has been in my occupation only one year. I am perfectly convinced that all wet land that is worth farming, is likewise worth draining; and therefore am now draining this piece of land.

The Osier thrives best, the New Kind next, and the Willow the worst. All the three sorts invariably thrive best on the dryest spots in the field. The expence attending the planting and the sets planted was five pounds per acre, by contract, and I prepared the land. I shall be happy, at all times, to answer any questions which you may think fit to propose concerning them, whether I am the successful Candidate or not.

I am, SIR,
Your most obedient
humble Servant,
THOMAS SELBY.

Otford Castle, near Seven Oaks, Kent,
November 18, 1800.

Mr. C. TAYLOR.

The preceding Statement is confirmed by the Certificates of

NATH. GEORGE WOODROFFE, A.M. Curate of Otford;
WM. WALLER, Churchwarden;
JOHN COOPER, Seven-Oaks, the Planter.

The Gold Medal, being the Premium offered for sowing, planting, and inclosing Timber-trees, was this Session adjudged to Thomas Johnes, M. P. of Hafod, from whom the following Accounts were received.

Account of Trees and Acorns planted by Thomas Johnes, *Esq. of Hafod, in Cardiganshire.*

FROM June 1796, to June 1797, 250,000 Trees were planted; of which 20,000 were three-years-old transplanted Alders, 30,000 one-year-old transplanted Alders; the others were Elm, Beech, Birch, Ash, and Mountain Ash.

The mode of planting was as follows: After the ground was well inclosed, a man, with a spade, made two cross cuts in the sod (the ground not being previously ploughed or otherwise prepared);

he was followed by a boy with a bundle of the trees; the plants were in size from nine to twelve inches: the boy placed one of them in the gap, caused by the raising of the spade; the man then pressed the sod close down with his feet, which completed the business. About 10,000 were planted to the acre.

The soil is various; from a light gravel, to a peat bog. All trees thrive well therein, if properly secured; but Larch and Beech seem to flourish most. *

*Between October 1798, and April 1799, fifty-five acres of good ground were

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* It may be proper to remark that Mr. Johnes had planted in the same year 400,000 Larch Trees, not noted in the above account, as he had received the Gold Medal for them the preceding Session, and an account of them was inserted in the XVIIIth Volume of the Society's Transactions.

A further account of this gentleman's general Plantations and extensive Improvements, will be found in the Preface to the present Volume.

An ingenious Pamphlet by George Cumberland, Esq. entitled " An Attempt to describe Hafod," was printed in 1796, and is sold by T. Egerton, Whitehall.

were set or planted with Acorns, besides 165,000 Trees in the same time.

The Acorns were planted by a man with a spade paring off a thin turf and throwing it over, afterwards driving his spade two or three times into the ground to loosen the earth, then lifting up a spade full, whilst a boy was ready to throw in two or three Acorns; the earth was then gently trod down with the foot. The Acorns were planted two feet asunder.

The greatest part of the plantations is fenced with a stone wall, five feet high; the remainder, with a turf fence, the same height.

Certificates were sent from James Todd, gardener to Mr. Johnes, and the Rev. Lewis Evans, Minister of Eglwys Newydd, confirming the above; and stating that the plants were growing exceedingly well and in full vigour.

The SILVER MEDAL or TWENTY GUINEAS, at the option of the Candidate, being the Premium offered for the Cultivation of SPRING-WHEAT, was this Session adjudged to Mr. ROBERT BROWN, of Markle, in the Parish of Preston and County of Haddington, Scotland, from whom the following Account and Certificates were received, and who made choice of the Pecuniary Reward.

⁂ *This Communication will particularly demand the attention of the Farmer, when bad seasons prevent the autumnal sowing of Wheat.*

Samples of the Wheat may be seen, by application to the Register, at the Rooms of the Society.

An Account of the Management of several Fields of Spring-Wheat, belonging to Mr. Robert Brown, Farmer, at Markle, near Haddington.

THE autumn and winter of 1799 being extremely wet, rendered the sowing of Wheat, except in a few situations, almost impracticable. I therefore determined to postpone sowing my Wheat-seed till the spring months; trusting, as my ground was in good condition, that if the weather was then favourable, I could get the business accomplished in a proper manner. The land was therefore ploughed in as good order as possible; and from the uncommon frosts which afterwards prevailed, it turned very mellow and fine when dry weather arrived.

About the 20th of February, 1800, I commenced sowing, which was continued, as circumstances permitted, till the middle of March; and in that time one hundred and forty-five acres were sown, besides ten acres afterwards ploughed down. The soil of the greatest part of the land thus sown, was a deep loam incumbent upon clay; and the remainder was a lighter loam upon a gravelly bottom. Thirty acres had been summer-fallowed, limed, and dunged, the preceding year. Ninety-five acres were after a crop of drilled beans, which had been completely horse-hoed. Fourteen acres had been occupied by turnips and potatoes, both drilled and horse-hoed; and six acres had carried summer tares. None of the fields received more than one ploughing, after the preceding crop was removed, except those under summer fallow; which had seven ploughings, and were manured with fourteen double-horse cart-loads of dung, and three hundred bushels of shell-lime per acre.

The kind of Wheat sown was principally the Essex White and Egyptian

Red, which in shape of head and size of grain are nearly similar. Some of the White Wheat was of the Kentish variety, which from being long sown upon the farm, was much blended with Red Wheat. The crop upon the heavy loams was, with a few trifling exceptions, uniformly good. The light loam was much hurt by the growth of yellow weeds, which last year prevailed upon such soils in an uncommon degree. The whole was ready for the sickle about the first week of September, and was cut from the 3d to the 12th of that month. A sample of the Essex kind accompanies this Paper.

From the small quantity yet threshed, the produce cannot be exactly ascertained; but, from trials which have been made, it is supposed that the fields sown after summer fallow, will yield forty bushels per acre; those sown after beans, thirty-six bushels; and those after tares, potatoes, and turnips, twenty-four bushels. The last being upon the dry soil were much injured by the drought and yellow weeds, while the deep loam was rather benefited by the dry weather.

The weight of the grain already threshed, is nearly sixty-two pounds per Winchester bushel.

The inferences which may be drawn from the above statement, are,

First, That Wheat may be sown with advantage in the spring months, till the middle of March, if the weather is then dry, the land in good condition, and the succeeding summer moderately warm.

Secondly, That under the above circumstances, the period of harvest is not retarded above ten days by the late sowing, especially in favourable seasons.

Thirdly, That the grain produced from spring crops of Wheat is equally good in quality, as that sown in the autumn and winter months.

WE, ALEXANDER DODS, farmer in Newmans, and ANDREW SOMERVILLE, farmer in Athalstonefordmaine, in the parish of Athalstoneford, in the county of Haddington, Scotland, do hereby certify that the several fields of Spring Wheat, mentioned in the statement given in the preceding pages, and belonging to Robert Brown, farmer at Markle in this county, were cultivated and managed as therein stated; and that the different circumstances connected with the management of the said crop of Wheat, are faithfully described; as witness our hands, this 2d of December, 1800.

ALEXANDER DODS.
ANDREW SOMERVILLE.

THIS is to certify, that I have measured those fields that were sown with Wheat, last spring, upon the farm of Markle in the parish of Preston, and upon the farm of West-Fortune in the parish of Athelstoneford, both in the county of Haddington, as the same are possessed by Robert Brown, Esq. and find the contents, in English statute acres, to be as under, viz.

	A.	
On the farm of Markle - -	117	90
On West-Fortune - - - -	27	51
Amount in Acres	145	41

William Dickinson,
Land Surveyor.

The THANKS of the Society were this Session voted to Mr. JOHN TAYLOR, of Manchester, for the following Account of the Method of making Clover-Hay in wet weather, as practised in Courland.

An Account of the Method of making Clover-Hay, invented by the Rev. Mr. Klapmeyer, of Wormen, in Courland; communicated to the Secretary, by his Son Mr. John Taylor.

IN the method of making Hay, recommended by the Rev. Mr. Klapmeyer, not only a number of hands are saved, but the Hay is better and more nourishing. The Hay is prepared by self-fermentation, whereby it retains its nutritious juices, and only loses its watery particles; it is dried more expeditiously by dissipation of its humidity, and contraction of the sap-vessels, and thus its nutritious juices are concentrated. This process is conducted in the following manner, viz. The sap-vessels are expanded by the circulation of the liquid juices by heat, and the superfluous humidity is exhaled: on cooling, the sap-vessels contract, and thus future intestine fermentation is prevented, and the nutritious quality preserved.

Upon this principle, the Clover intended for Hay, after having been mowed, remains till four o'clock in the afternoon of the following day, in the swath, to dry; it must then be raked together into small coils, and afterwards made into large cocks in the form of a sugar-loaf, and such as would require six or eight horses to remove. To prevent the air from penetrating these cocks, and to produce a quicker fermentation, they must, whilst forming, be trod down by one or two men. If it be a still close warm night, the fermentation will commence in four hours, and manifest itself by a strong honey-like smell: when a proper fermentation is begun, the cocks will, on being opened, smoke, appear brownish, and may then be spread abroad. If in the morning the sun is warm, and a little wind arises, the Clover-Hay will quickly dry; it may then, towards noon, be turned with the rake or pitch-fork, and, about four in the afternoon, will be sufficiently dried, so that it may be immediately carted into the barn, without any danger of a second fermentation.

By this method of management the Clover will require only three days, from the time of mowing, to its being housed, and very little work: whilst in the common way, even in good weather, it requires six or eight days; in the old method it frequently becomes of a black colour; but in the new method it is only brown, has an agreeable smell, and remains good and unchangeable in the barn. The farmer has also another advantage, that if he has not carts enough to carry it into the barn, he needs only, at sun-setting, to heap it again into large well-trodden cocks, and thatch them with straw, in which state they will remain the whole summer without damage or loss. This Clover-Hay is not only greedily eaten by sheep and lambs, but also by horses, calves, and cows.

The last in particular prefer it to the best Meadow-Hay: it produces a great quantity of rich milk; and the butter made from it, is almost as yellow as summer butter.

As this new mode of making Hay depends principally upon two circumstances — first, that the mown Clover, when brought together into large heaps, may ferment equally and expeditiously; secondly, that if the day succeeding the fermentation be dry, sunny, and windy — on this account it may be proper to point out what should be done when circumstances are unfavourable.

Let us suppose, therefore, that the night after the Clover-Grass has been placed in the great cocks, be cold, damp, or rainy, the fermentation will yet take place, although it may require a term of twelve, sixteen, or twenty-four hours to effect it. If it be a second or third crop, at which season the nights are colder, it may even require from thirty-six to forty-eight hours before the fermentation ensues: it will however commence, and may be ascertained from this circumstance, that you can scarcely bear your hand in the interior of the cock.

Even if the night be dry, yet if a strong cold wind blows, the cock may not ferment equally, but only in the middle and on the side opposite to the wind; the other parts may still remain green. In such a case the following rules must be attended to:—

First, If the cock has only fermented in the middle, and on that side where the cold wind did not act upon it, the whole heap must nevertheless be opened the following morning. That which has already fermented must be separated and spread to dry; it must be turned towards noon, and may be carted into the barn in the evening: but that part of the cock which has not fermented, must be again put together into large cocks, and fermented in the same manner as the preceding part, after which it may be spread to dry, and brought into the barn.

Secondly, In such cases where a small portion of the cock has fermented thoroughly, but not the greater part, the heap must be spread abroad in the morning, but must be again made into a close cock in the evening, in such a manner that the part which has fermented be placed at the top or outside of the cock, and that which has not fermented be inclosed within it; then on the ensuing morning, or, if the weather be cold and rainy, on the morning afterwards, the Clover heap may be again spread abroad, and the Clover treated as in Case N° I.

Thirdly, If, in spreading the heap abroad, it be found that nearly the whole of the Clover has fermented, it will not be necessary to delay the housing of the whole on account of some small portion; but the Clover may be dried and carted into the barn. The small portion of Clover which remained unfermented, will not occasion any disaster to the other which has fermented; for there is a material difference betwixt hay thus managed, and the meadow grass which is brought whilst damp, or wet with rain, into the barn, which will grow musty and putrid.

Fourthly, In such instances, where some of the cocks of Clover have thoroughly fermented, and it rains on the morning, they ought to be spread abroad, for the Clover must be opened and spread, even if it rains violently; since, if it was suffered to remain longer in the heap, it would take fire, or its juices would be injured by too much fermentation; the leaves and stalks would become black, and the Clover unfit for food: therefore, if the rain continues, the spread Clover must be turned from time to time, but not carted into the barn till dry. This drying takes place, if the rain discontinues for a few hours, much more expeditiously with the Clover which has fermented, than with that made in the common way. Besides which, it must be remarked, that the fermented Clover remains good, even if it continues some weeks exposed to the rain, provided it is at last suffered to dry before it is put into the barn; otherwise the wet from the rain will render it musty and bad. The Clover which has been for so long a time exposed to the rain, will not, however, be so nutritious as that which has been well fermented and sooner dried; but it will be far superior to that which has been exposed to the rain, and got up in the common method.

This new mode has been adopted with success, during the years 1798 and 1799, in Silesia, and found, in every respect, preferable to the old manner. On one of the estates there, it rained much during the Hay time; they were obliged to spread the Clover out of the large cocks, owing to its having fermented only in the middle: the parts which had not fermented were carefully separated and made again into large cocks, which fermented at the expiration of thirty-six hours, rainy weather and cold nights continuing during this period; after which time it was again spread abroad. The former, as well as the latter, remained for three days exposed to the rain, during which period it was turned several times; the rain ceased on the fourth day, so that the Clover-Hay was turned towards noon, and carted into the barn that evening. This Clover-Hay remained in the hay-loft without change, and was a very nutritious food. Several milch-cows were fed with it, who not only eat it greedily, but also increased in their milk. Lambs and calves also thrived with it greatly. This method of making Clover-Hay prevents its taking fire; for Clover which has been once well fermented and dried, does not change or spoil in the hay-loft.

Thus far I have given you the practice related by Mr. Klapmeyer; and if the hay season be wet in Lancashire, as is generally the case, I recommend you to make the trial on your farm.

If the weather should be remarkably hot, you may, by adopting this plan, prevent a frequent accident; for grass hastily made into hay, however dry it may appear to the hand, contains within its fibres much humidity; and when trod down in the stack will ferment rapidly, from this humidity endeavouring to escape, which often fires the stack. A certain degree of fermentation is necessary in the making of Hay, in order to develop its saccharine qualities, and make nutritious food. This saccharine fermentation is evident, from the smell and colour of the Hay in common stacks; and from tasting an infusion of it, it resembles, in some degree, the process of making malt from barley, and requires a similar attention. I have no doubt that the method above related will prove generally advantageous, in making Clover-Lucerne and Meadow-Hay in England, and lead to valuable improvements in Agriculture.

I remain

Yours very affectionately,

JOHN TAYLOR.

Leipsig, June 4, 1800.

Mr. JOHN PALMER, of Maxstock near Coleshill, in Warwickshire, furnished the following Communication of a Method of HARVESTING CORN in WET WEATHER. Mr. PALMER did not comply with the Conditions prescribed for the whole of the Premium offered; but as the Society were of opinion that the Method he used would be serviceable, if more generally known, the SILVER MEDAL was adjudged to him as a Bounty.

SIR,

I MUST request the favour of you to lay before the Society for the Encouragement of Arts, &c. the following Account and Certificates, in claim of the Premium offered for the best and cheapest method of harvesting Corn in wet weather. The mode I have adopted is simple and effectual, and will, I hope, be approved.

The weather proving extremely rainy, and my Corn then standing taking much damage, I determined upon cutting it wet, and thrashing it immediately, and then drying it on a kiln: in consequence of this, I collected as many men as were sufficient for the purpose, and employed them as follows, viz.

I caused a part of my men to cut the Corn in the common method with sickles, and bind it into sheaves. A second part I employed to load it on waggons, and carry it to the barn; and as many as could work in the barn, to thrash it. The next morning I winnowed it, and carried it to a malt-kiln to be dried; which operation was always completed in less than twenty-four hours.

As it is impossible for me to send you two sheaves of the Corn harvested as above described, I have sent you the produce of two sheaves and upwards, which I declare to be a fair sample of the produce of four acres and upwards.

A timber-stove, or a hop-kiln, will answer the purpose of drying Corn equally well as a malt-kiln.

The Expense per Acre was as under stated.

	£.	s.	d.
Reaping and carrying to the barn	0	12	0
Thrashing and winnowing - -	0	12	0
Kiln-drying - - - - - - -	0	5	0
	1	9	0

N. B. Only a part of the above sum should be charged to my new method of harvesting Corn, viz. the extra expence, which is as follows:

Five shillings per acre for drying, and four shillings for the extra trouble of thrashing it.

After the Wheat above mentioned was thrashed in the common method with flails, and dried, I so far completed a machine for thrashing, that I thrashed a very considerable quantity of Wheat, and ten acres of Barley with it, carried from the field in November; and it was dried in the manner described in my claim. I did not however state this to the Society, because I had taken out a patent, dated the 6th of December, 1799, for my thrashing-machine; and was that day going to London to give in my specification, dated the 4th of January, 1800.

Part of the straw of the four acres, described in my claim, was used for thatch immediately after it was thrashed; and part stacked in small narrow ridges, for litter for my fold-yard.

The grain was very well separated from the straw by the flails; but that thrashed by the machine was completely cleared, though in a very wet state. This would not be the case with the common machines of the North.

The quantity of Wheat upon an acre, was about twenty-one bushels, which is nearly as much as there would have been, if it had been dried by fine weather. When the advantage of getting in an acre of Wheat per day, in seasons like the last, is properly considered, and making it immediately useful, at the small additional expence of nine shillings per acre, there can be but little doubt respecting its utility; for probably these men could not be employed at any other work.

I am, Sir,

Your humble servant,

JOHN PALMER.

Maxstock, 24th May, 1800.

Mr. CHARLES TAYLOR.

The above letter was accompanied with three Certificates; one from Mr. Edward Palmer, of Maxstock in the county of Warwick; another from the Rev. John Dilke, of Maxstock Castle; and the third from Mr. William Twamley, of Sutton Colfield in the county of Warwick, miller: which testify that Mr. John Palmer did harvest four acres of Wheat and upwards, in the year 1799; that his plan is likely to be of general advantage; and that his thrashing machine is in high repute, and answers every end proposed.

The Gold Medal, being the Premium offered for improving Land lying waste, was this Session adjudged to Thomas Fogg, Esq. of Bolton in the Moors, Lancashire, from whom the following Account and Certificates were received.

SIR,

THIS is to certify, that Mr. Thomas Fogg, of Bolton in the Moors, in the county of Lancaster, manufacturer, has made the following improvements upon some Waste Land belonging to him, situated in Edgeworth, in the said county, viz.

	£.	*s.*	*d.*
Expences—In walling fences 500 roods, 8 yards to the rood, from 5 to 6 feet in height, at 8s. 6d. - - -	212	10	10
Expences—6½ statute acres covered with stone drains, at 3s. per rood, 8 yards to the rood The same ditto with black soil, lime, and dung, at 6s. per rood, in all 9s. per rood - - -	221	17	0
Carried over	£.434	7	10

	£.	s.	d.
Brought over -	434	7	10
This land was worth about 5s. per statute acre in its original state, being of the nature of black soil, producing bent, and is now good meadow and pasture land, and valued at £3. per statute acre.			
Expences of 13 statute acres covered with black soil and lime, of sufficient depth to have carried a crop of oats, which was sown with grass seeds, supposed to have cost 6s. per rood,	294	18	0
This land was worth about 3s. per acre in its original state, being of the nature of black and hazel soil, and producing black heath and bent, and is worth about £2 : 2s. per acre.			
Expences—2 statute acres of land fenced out, and sets found for many poor people to plant for potatoes, at £.10 per acre - - - - - -	20	0	0
This land was worth about 2s. per acre in its original state, being of the nature of black soil, and producing nothing but rushes, and is now worth about £2 : 2s. per acre.			
	£.749	5	10

	£.	s.	d.
Brought over -	749	5	10
Expences—3 statute acres of land planted with timber of different descriptions, which seem to be in a flourishing condition. This land is fenced with double rails and brush-wood, to keep the west and north winds from the trees. It cost more than £.20 per acre - - - - - -	60	0	0
This land was worth about 2s. per acre in its original state, being of the nature of black soil, producing bent grass.			
Expences—26 statute acres levelled and drained with open and covered drains, at present very dry, and the next spring will be ready for any sort of manure, which we believe cost about £200. - - -	200	0	0
This land was worth about 2s. per acre in its original state, being of the nature of black soil, and producing black heath and bent grass, and is now worth about £1. 11s. 6d. per acre.			
Total -	£.1009	5	10

N. B. We believe that there are not less than 500 cart loads of soil collected, and ready to be laid on the said 26 acres of land, the next spring, together with other manure; also that the above improvements have been made, and money expended, since the beginning of the year 1794.

The above account of expenses upon the above Land, as shewn to us by the said Mr. Thomas Fogg, we believe to be true; and the improvement of the Land we are well acquainted with; as witness our hands, this 4th day of December, 1800.

AMOS OGDEN, Minister of Turton.
JOHN HORROCKS.
JOHN ASHWORTH.

Signed in the presence of
EDWARD CROMPTON.

SIR,

I HEREWITH send you a description of the Waste Land I have inclosed from the Common called Edgworth Moor, in the parish of Bolton, and county of Lancashire, by an act of Parliament, granted for that purpose; and also an account of the Method which I have taken for the improvement of the said Waste.

Upon one of the small plots I have built a farm-house, cow-house, and a room above for hay.

Five of the plots were all of similar black soils; the situation, a gentle descent to the south, of about one inch to the yard. One of these plots I manured upon the green swarth; but the soil being too wet, it did not answer my expectations. I then drained all the five plots with stone, laying bottoms underneath. The main-drains opened about two feet square, and smaller drains are directed into them. I afterwards covered the land with compost made from lime, soil, and black dung, which answered very well; and they are now as good meadow and pasture lands as any in the neighbourhood.

On a small plot I have walled out a nursery for plants, in which I have about 6000 two-year-old and one-year-old trees: these I take up and plant out as I have occasion.

Two of the plots were alike very bad and bare of soil, they produced nothing but bent-grass. On many parts of them there was no soil, large beds of rocks appearing on the surface: these I got up, and made part of the walls with them, levelling the land at a great expense. I then covered the ground with a compost of lime and rich black soil, produced from decayed timber and vegetables; which soil I dug out of one part of the premises. With the above compost I covered the two plots, from three to four inches thick. The cattle seem to like this pasture better than any of my old inclosures. It has a south aspect, falling from north to south three or four inches in a yard.

Another plot I have improved upon the same plan as the two last, and have no doubt of its answering: but as it has been only done this year, I must attend until the next year to ascertain it. It has a north-east aspect, with a fall of about one inch to the yard from the south.

Two other plots were very boggy and full of small pits, whence peat had been got. Many places were not passable, being full of water: these lots I have levelled and drained with open drains, at a great expense, as they would not bear the cattle to tread upon them. I first made a large drain, which answers the purpose of a fence: it is three yards wide at top, one at the bottom, and two deep. I then cut small drains directed into it, about four yards asunder; with the soil from which I filled up the pits, and where the land wanted I put it sometimes on the middle of the butts, after hacking it small. These small drains are about one foot in width, and from twelve to eighteen inches deep; taking care not to go into the clay. These small drains are cut by a line: I paid for them 1½d. per rood, of eight yards. These plots have a north-east aspect, with a gentle inclination from the south. They are now as dry as any land I have, and fit for any manure; I have about 500 loads of soil heaped up for that purpose, which I mean to mix with lime next spring.

Another plot, which is nearly flat, I have drained with open drains, and levelled the land, which is now dry enough for tillage.

Another part I have planted with Black Italian Poplar, Lombardy Poplar, Beech, Scotch-Fir, Larch, Sycamore, Ash, Alder, Huntingdon-Willows, and a few Oaks; they flourish well in general: the Larches seem to thrive best, and the Sycamore next. This plantation is double-railed to the west: I have platted brush-wood in the rails, and fastened it in the ground.

I drained other parts of the land which were mossy, and planted one plot thereof, which had from three to four feet deep of good black soil, with potatoes. A person of the name of Duckworth, who is unacquainted with my application to your Society, told Mr. John Ashworth, of Turton, the Secretary to the Manchester Agricultural Society, that he had weighed the potatoes grown in two different places of it, and the produce was above 7¼lb. to a square yard upon the average.

I remain, SIR,

Your most obedient servant,

THOMAS FOGG.

Bolton,
December 31, 1800.

Mr. CHARLES TAYLOR.

SIR,

I WAS duly favoured with yours, acquainting me that the Society of Arts had adjudged me the Gold Medal, or the Silver Medal and Twenty Guineas, for my Improvement of Waste Land. I beg leave to inform you that I shall make choice of the Gold Medal, both for the honour it confers, and the good effect it may have on others, in this part, by stimulating some of my neighbours who hold a large quantity of the same description of Waste Land, and who can well afford to improve it.

About Christmas last I begun to prepare about three acres of Waste Land, adjoining to what I had last year in potatoes, which will make about five acres. As I mean to plant the old ground also, I caused the fresh land to be dug up, which appears to be much mellowed by the frost, which has been of great service to it. Potatoes are very dear at present in this neighbourhood. Last year, in order to save the principal part of the root for the use of the table, I procured what is called a cheese-tryer, by which I had the best of the eyes taken out, with little damage to the potatoe.

With those sets I planted about twenty roods upon Bolton-Moor, along with others cut according to the custom of this part; that is, the whole root cut away to the eyes. This method the growers in general most approve of; but those cut out by the cheese-tryer, were equally as good a crop as the others. A neighbour of mine, Mr. James Carlile, pared a quantity so deep as to take the eye fairly out, last year, and planted them; first cutting from the eye nearly all the parings. These, he says, answered, and were as good a crop as those cut upon the old method. I have such confidence in seed thus cut, that what has been used for some time in my house, has been pared that way. I am of opinion, that the parings, if put either in dry sand or ashes, will be preserved till they are wanted. I mean to give them a fair trial this season, and shall take the liberty of communicating the result to the Society.

I remain, Sir,
Your most obedient
humble servant,
Thomas Fogg.

Bolton,
February 28, 1801.

Mr. Charles Taylor.

The Thanks of the Society were this Session voted to his Grace the DUKE OF BRIDGEWATER, for a Model of a Drain-Plough, presented by him to them, and sent with the following Communication from his Grace's Agent, Mr. Thomas Bury, of Worsley Mills, near Manchester.

The Model, which is made upon a scale of one inch to a foot, is placed in the Society's Repository for public inspection.

SIR,

I AM favoured with yours of the 15th instant. The model of the Guttering-Plough sent you, was a present to the Society from his Grace the Duke of Bridgewater, made by Robert Tomlinson, one of his Grace's constant workmen.

I procured the following account this morning from the Duke's farmer:—In clay or stiff land that lies flat, the plough cannot go too deep; but if it lies on a declivity, about five inches deep is sufficient. In soft light soil, the Plough should go as deep as it can in all situations, because the sides moulder into the gutters. The best time of draining is about Michaelmas, or as soon as the grass is eaten; and the whole should be accomplished betwixt that time and Christmas.

In clay ground that has never been drained, six good horses will be requisite to draw the Plough. In every following year the Plough should be run through the same gutters, and four horses will then be sufficient.

I am, Sir,

Your most obedient servant,

Thomas Bury.

P. S The

P. S. The Share of the Plough must be well steeled, and should be ground sharp.

Worsley,
September 18, 1800.

Mr. CHARLES TAYLOR.

⁂ At Broughton, in the neighbourhood of Manchester, considerable quantities of stiff clay, pasture, and meadow land, have been much improved, under the inspection of the Secretary of the Society, by the use of this Plough.

After the cattle were housed for the winter, three horses were employed to form drains with the Plough at proper intervals: the small drains were made at the distance of about nine yards from each other, in old furrows of the ground, and about five inches deep: the sod, when cut out by the Plough, was of a wedge-like form, and turned out by it upon the ridges of the land, entirely separated from the drain or gutter. These sods were afterwards divided across, by a spade, into lengths of about two feet each, then tossed by a pitchfork into a cart, and placed in a heap in the field, along with strata of quick lime in a powdery state: the whole mass was reduced to a compost by the frost during the winter, and in the following spring was laid upon the surface of the land, and formed an excellent top-dressing.

The water from the small drains was directed into larger drains, made by lowering the share of the Plough to the depth of nine or more inches. Little or no loss of land arose from the small drains, as natural grasses were produced therein, early in the spring. It will be highly advantageous to repeat the operation every winter: it is easily and expeditiously performed; and no person, without an actual experiment of the fact, can form a sufficient judgment of the great benefit arising to vegetation by the removal of cold stagnant water, during the winter, from land of every description.

Description of the Duke of Bridgewater's Drain-Plough, Plate I. Fig. 1.

A B.	The beam of the Plough.
C D.	The handles.
E.	The share or sock.
F.	The coulter, or first cutter of the sod; which coulter is fixed to the share.
G.	The other coulter, or second cutter, which separates the sod from the land, and directs it through the open space betwixt F and G. This coulter is connected with the share and the beam.
H I.	The sheath of the plough.
K.	The bridle or muzzle, to which the swingle-tree is to be fixed.

L M. Two

LM. Two wheels of cast iron, which may be raised or lowered by screws at N, pressing upon the flat irons O O, to which the axis of each wheel is fixed. These wheels regulate the depth which the share is to penetrate into the earth.

P. A chain with an iron pin, to move the screws at O.

The SILVER MEDAL was this Session voted to THOMAS ANDREW KNIGHT, Esq. of Elton, near Ludlow, for his Invention of a DRILL MACHINE for sowing Turnip-seed; a Plate of which is annexed to the following Description of its form and mode of application. A complete Machine was presented by him, and is placed in the Society's Repository.

SIR,

I HAVE sent you a small instrument for sowing Turnips, which I have tried on several different soils, and think I can venture to assert, that it will sow the seed and cover it perfectly well, in any soil that is nearly in a proper state to receive it. It is necessary either to harrow the ground *across*, or to roll it, previously to the instrument being used, that the labourer may see the rows he has made; but I have always found the crop to succeed better after the roller than after the harrow, though the ground has been very strong.

The instrument is so extremely simple in its construction, that it is almost unnecessary to give a description of its mode of action; but as parts of it may probably be broken in carriage, I have added the following sketch:—*See Plate I. Fig.* 2. A, the iron wheel, which, running on its edge, formed by two concave sides, makes the groove into which the seeds fall. I have sometimes used a wheel with strait sides; but I think that concave sides, when well executed, are to be preferred in strong soils, and indeed in any soil. B is a wheel moving on the same axis with A, and turning the wheel C (which gives out the seed) by means of a strap. I have several sizes of the wheel B, in order to increase or diminish the rapidity of C; and consequently to sow more or less seed. D, the tube through which the seed passes, and falls into the channel made by the iron wheel. E, the feet of the instrument. F, six lengths of jack-chain; which I find cover the seed remarkably well. The chain is perhaps preferable to any kind of harrow, because it can never become encumbered by loose straw, which is almost always found on or close to the surface, when the ground has been manured; and the iron cutting-wheel has a similar advantage over any kind of share. G I, the seed-box. H H, the handles of the machine.

The labour of using the instrument is very small. My workman usually accomplishes four statute acres or something more in a day: and last night, with the one I send, he sowed an acre and a half after six o'clock in the evening. There are two holes before the axis of the great wheel, to receive two pieces of cane, which point out the proper width of the intervals between the rows. I usually place my rows at eighteen or twenty inches distance; and I wish my plants to stand at not more than six inches apart in the row; for I find that three small turnips weigh about as much as one large turnip, are more solid, and I think more nutricious, and certainly are much less apt to suffer by unfavourable weather. The ground between the rows is, of course, worked with the hoe. Should the Society, at their next meeting, approve of the instrument, and will afford it a place in their Repository, I will beg them to accept it; if not, I will request you to return it at your leisure.

I am, Sir,
Your most obedient servant,
Thomas Andrew Knight.

Elton, near Ludlow,
June 22, 1800.

Mr. Charles Taylor.

N. B. The angle which forms the edge of the wheel A, must be made more or less acute; and the instrument more or less heavy, proportional to the strength of the soil. I have sometimes added weights of lead over the axis of the wheel, but it will rarely be found necessary. I have tried the instrument on different soils, and I think it will answer on any. A great advantage may be derived by sowing turnips with it, at a time when horses, now commonly used for the same purpose, are engaged in other employments. A few days are frequently of importance in sowing turnips, which by fortunate rains have got a wonderful start of those which have been sown a day or two later.

Fig. 3. is a section, on a larger scale, of the seed-box G, in *fig.* 2. The wheel, marked C, is also the same as in that figure: it is fixed upon the axis of the cylinder I, which is pierced upon the surface with holes at K, for the seed. This cylinder turns round within a groove at the bottom of the box, and is so well fitted therein, that no seed falls from the box but what is delivered by the holes K. A small brush, marked L, rubs against the cylinder, to clear out any seeds which may remain in the holes.

The seeds fall into the tube underneath the cylinder, and from thence into the channel, made by the indenting rim of the iron wheel.

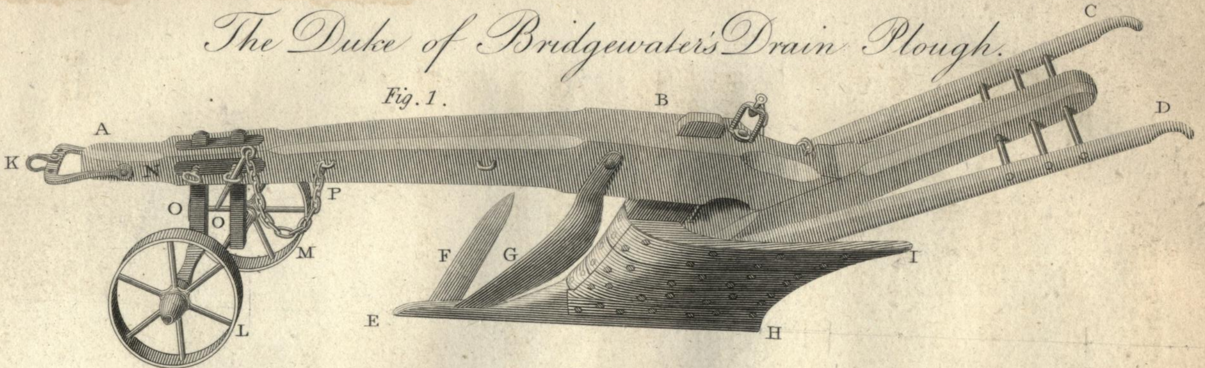
The loose chains which follow, cover the seeds with earth, as before mentioned.

Fig. 4. a front view of the wheel, exhibiting its edge.

Pl. 1.

The Duke of Bridgewater's Drain Plough.

Fig. 1.



Mr. T. A. Knight's Drill Machine.

Fig. 3.

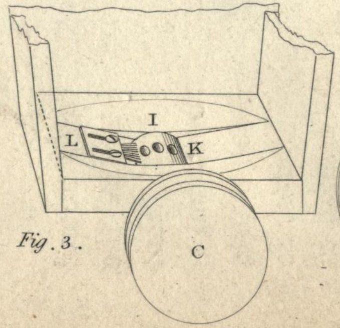


Fig. 2.

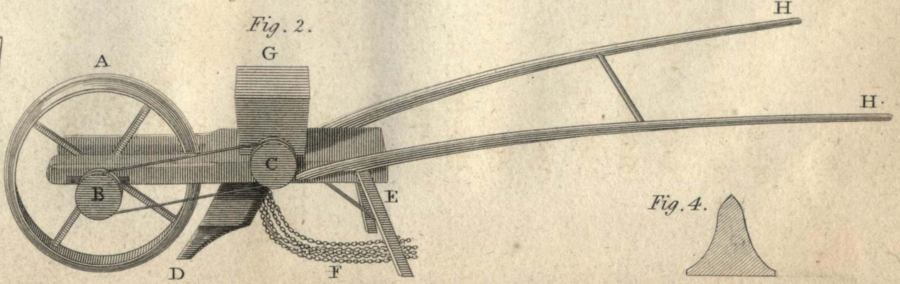


Fig. 4.

Lowry Sculp.

The Thanks of the Society were this Session voted to THOMAS ANDREW KNIGHT, Esq. of Elton, near Ludlow, for the following ingenious Communication on the destructive Effects of the APHIS, and BLIGHTS on FRUIT-TREES; with useful Observations for preventing them.

SIR,

SO many writers on gardening, and on general agriculture, have treated on Blights, and so many different theories have been offered to the Public, that the subject may appear to many, to have been already sufficiently investigated. The Society, however, entertained a contrary opinion; and having expressed a wish to receive further information, I avail myself of this opportunity to lay before them some remarks, which I have at different times made, during several years of rather close attention to the subject.

What are usually termed Blights, in the vague and extensive signification of that word, appear to me to originate from three distinct causes:—From insects, from parasitical plants, and from unfavourable seasons.

The destructive effects of the Aphis on wall-trees are so well known to every gardener, as scarcely to require description. The leaves curl up, the fruit drops off, and the progress of vegetation is almost totally suspended. Much ill-applied labour is often used by the gardener to destroy these insects, though they are not very tenacious of life. Another more extensive, but less fatal disease in plants, the honey-dew, is produced by this insect (as described by the Abbé Boissier de Sauvages). It has, however, been contended, that the honey-dew is not produced by the Aphis, but that it is a morbid exudation from the plant; at least that there are two kinds of it; because the leaves are often covered with honey on trees where the Aphis is not found, and because the Aphis is sometimes found without the honey-dew. But to this it may be objected, that honey, not being a volatile substance, will remain on the leaves, till it be washed off by the rain; and, when moistened by the dew, will leave the appearance of a recent exudation; and that the Aphis certainly does not afford honey at any period of its existence. I have frequently placed plates of glass and of talc under the leaves of fruit-trees, on which different species of the Aphis abounded, and I have found these substances to be in a few hours covered with honey: and I have at other times distinctly seen the honey fall from the under-sides of the leaves, where these insects abounded, by the following means. Having placed a small branch, containing a numerous colony of insects, in the window of my study, where the sun shone strongly upon it, I closed the shutters so as to exclude all the light, but that which fell directly on the branch. In this situation the descending drops of honey became extremely visible by refraction, and appeared evidently to be emitted from the insect with considerable force. Each drop contained many minute white points, which I considered as the eggs of the Aphis; but as I knew that the modes of generation in this singular insect had much engaged the attention of naturalists, I did not examine with sufficient attention to decide that point. This species of insect appears to require a previous disposition in the tree to receive it; and its first attacks may thence be considered as symptomatic of a previous ill habit in the tree; for I have found that trees which have lately been transplanted, have totally escaped its attacks, when every other tree of the same kind of fruit, growing in the same situation, has been nearly destroyed. And I can assert from many experiments, that if every peach and nectarine tree was to be dug up once in every five or six years, and to be replanted with some fresh mould round the roots (which should be as little injured as possible), a much larger quantity of fruit, and of very superior quality, would be obtained. It is unnecessary to inform the experienced gardener, that the tree should be removed early in the autumn; that its branches should be considerably retrenched, and that it should not be suffered to bear a heavy crop of fruit in the succeeding season. I have never found any species amongst the numerous and prolific genus of the Aphis, which was not readily destroyed on the wall-tree by covering it with a sheet of canvas, and under that introducing the smoke of tobacco. It is, however, necessary that the fumigation should be repeated twice or thrice, with intervals of four or five days. I have often seen the addition of sulphur recommended, and have known it tried, but always with fatal consequences to the tree, as well as to the insects.

The blossoms of apple and pear-trees are often said by farmers to be blighted, when they are destroyed by insects, which breed within them, or in their fruit; and the same term is used, when the leaves have been eaten by the caterpillar: but as the insects themselves, as well as the manner in which their depredations are made, are extremely obvious, they do not properly come under our observation when treating of Blights.

The species of parasitical plants which are found in the form of disease on other plants, appear to me greatly to exceed the number of those I have any where seen described by botanical writers. Of these the mildew is the most common and obvious. If a branch, infected with this disease, be struck by the hand in calm dry weather, a quantity of white powder will be found to fly from it; and if this be received on a plate of talc, or of glass, and examined by the microscope, it will be found to consist of very numerous oval bodies, evidently organized. There is another plant similar to this in every thing but colour (being of a tawney brown), which is not unfrequently found on the leaves of young apple-trees. Both these plants appear to me to be evidently species of mucor; and as much the greater number of species of this genus of plants is found to flourish in damp air, and in situations deprived of light, it may be supposed that the foregoing diseases might be prevented or removed, by placing the plants at proper distances: but I have not found this to be the case. They, however, abound most in low and sheltered situations; but they are not unfrequently seen in those of an opposite kind. The red and white mould on hops, and the black spots on stalks of wheat (the rubigo of Virgil), and many other diseases of plants, will, I think, be found to arise from the attacks of minute plants of this genus, which appears to me to possess qualities somewhat similar to the digestive powers of animals.

The most common and extensive causes of what are termed blights, remain still to be described, and evidently exist in the defects and sudden variations of our unsteady climate. Whatever be the cause by which the sap is raised and propelled to the extremities of trees, it is well known that its progress is accelerated by heat, and that it is checked, or totally suspended, by cold; and it has been ascertained by others, as well as by myself, and indeed is known to every experienced gardener, that a plant under the most skilful management, does not readily recover its former vigour, when it has been injured by exposure, for a few hours, to a temperature much below that to which it has been previously accustomed. It frequently happens in this climate, when the blossoms of our fruit-trees are just expanding, that a very warm day succeeds a night whose temperature has been some degrees below the freezing point of water. In such a day the evaporation from the unfolding leaves and blossoms will be greatly increased by the agency of heat and light, whilst the supply of nourishment is in a great measure cut off by the ill effects of the preceding night. The blossoms will nevertheless unfold themselves, but will be unproductive, from the want of due nourishment; whilst the hazy appearance of the air, which almost always accompanies such weather in the spring, will induce the gardener unjustly to infer that the ill effects he observes have arisen from some quality in the air (distinct from excess of heat and cold), which he denominates a Blight.

The best defence against this kind of weather for wall-trees, that I believe has yet been tried, is a covering of a double and triple net; for by this the tree is in some degree protected from frost; and the excess of evaporation, in the succeeding day, is in a very considerable degree prevented. Lightning is supposed by many to be very highly injurious to the blossoms of trees; but I believe that the ill effects which appear sometimes to accompany it, may be more justly attributed to excessive heat. The careful gardener often covers his trees with mats, or something of this kind; and by almost totally depriving the tree of light, creates that blight which he is anxious to exclude.

As the blossoms of every tree are formed during the preceding summer and autumn, they will evidently be more perfect in proportion as those seasons have been favourable, and as the management of the gardener has been judicious:

dicious: and as the power of bearing unfavourable weather will be proportional to their vigour, and to the maturity of the annual wood, through which the sap passes to support them, the gardener should be (though he rarely is) extremely attentive to keep his trees in such a state, and the branches at such distances from each other, that they may receive the greatest possible benefit from the portion of light and heat which our shadowy climate affords them. It frequently happens in pruning, that too much bearing-wood is left on the tree. Every gardener ought to know, that where a hundred fruits are a sufficient crop for a tree, he has a better chance to obtain that hundred from one thousand blossoms, to which the whole nourishment of the tree is directed, than when the same quantity of nourishment has to support a hundred thousand.

In standard fruit-trees, where no advantages can be derived from covering them, much may be done by the judicious application of the pruning-knife. The branches of a tree of this kind ought to be much thinned towards their extremities, so that the light may be admitted into the centre of the tree; but the internal parts of it should never be so thin as to admit of a free current of air through it. When a tree has been properly pruned, blossoms and fruit will be found on every part of it; and, in unfavourable seasons, the internal blossoms will receive protection from the external branches, which will be unfruitful.

It is particularly the interest of every planter, to take care that the varieties of fruit which he plants be sufficiently hardy for the situation in which he places them; for, if this be not attended to, little benefit will be derived from the foregoing observations. I could say much more on the subject; but, as my letter is already of considerable extent, I shall only add, that if the Society should receive (as they probably will) a more satisfactory account of the cause of Blight, than will be found in the preceding letter, they may dispose of it as they think proper.

I am, Sir,
Your most obedient servant,
Thomas Andrew Knight.

P. S. I do not send this paper as a claim for any premium, but to prevent attempts of imposition, from any pretender to the proposed reward.

Elton, near Ludlow,
November 4, 1800.

Mr. Charles Taylor.

The SILVER MEDAL was this Session presented to Mr. WILLIAM LESTER, of Northampton, for his Invention of an Implement in Husbandry, named by him a CULTIVATOR; from whom the following Account and Certificate were received, along with a Model, which is reserved in the Society's Repository.

SIR,

AS the health and luxuriance of Corn depend, in a great measure, on the pulverization of the soil previous to the seed being sown, the Society of Arts will, I am persuaded, give every encouragement in their power to the introduction of any implement that promises an abridgement of labour; and as all tenacious soils are pulverized in the best manner in dry weather, when their particles are the most disjointed, and their contact broken, the propriety of taking the advantage of working them in that state will be obvious: and at the same time it follows, that an improved implement for the abridgement of labour would be a desirable thing, in a climate like England, where the seasons are so uncertain.

In working on a rough fallow, my Cultivator should be set at its greatest expansion, and contracted in proportion as the clods are reduced. I am confident that one man, a boy, and six horses, will move as much land in a day, and as effectually, as six ploughs; I mean land in a fallow state, that has been previously ploughed.

It will be requisite in some states of the soil to alter the breadth of the shares; but of this, I presume, the farmer will always be a proper judge. By the expansion and contraction of the Cultivator, the points of the shares are, in a small degree, moved out of the direct line; but this is so trifling, that it is no impediment to its working.

I am, Sir,

Your most obedient servant,

WILLIAM LESTER.

Northampton,
February 10, 1801.

Mr. C. Taylor.

A Certificate from Mr. William Shaw, of Cotton-End, near Northampton, accompanied this letter; in which he states, that he had used Mr. Lester's Cultivator upon a turnip fallow last summer, and that he believes it to be a very useful implement for cultivating the land in a fallow state, by its working or scuffling off seven acres per day, with six horses. He adds, that, from its property of contracting and expanding, it is calculated to work the same land in a rough or fine state, by which mean it unites the principles of two implements in one; and by the index on the axis, it may be worked at any given depth required.

Description of Mr. Lester's Cultivator, Plate II. Fig. 1.

A.	The beam.
B B.	The handles.
C C.	A cross-bar of a semicircular form, containing a number of holes, which allow the two bars D D, to be placed nearer or further from each other.
D D.	Are two strong bars, moveable at one end, upon a pivot E, and extending from thence in a triangular form to the cross-bar C. In these bars are square holes, which allow the shares F, placed therein, to be fixed to any height required.

The seven shares marked F, are shaped at their lower extremities like small trowels: the upper parts of them are square iron bars.

G G G. Are three iron wheels, on which the machine is moved; they may be raised or lowered at pleasure.

H. The iron hook to which the swingletree and horses are to be fixed.

When the machine is first employed on the land, the bars D D are expanded as much as possible. As the soil is more loosened, they are brought nearer to the centre: the shares then occupy a less space, and the soil will consequently be better pulverized.

The Gold Medal, or the Silver Medal and Ten Guineas, at the option of the Candidate, being the Premium offered for the best Account of Experiments, to determine the comparative advantage of the Drill or Broad-cast Method in the Cultivation of Turnips, was this Session adjudged to the Rev. T. C. Munnings, of East Dereham, in Norfolk, from whom the following Account and Certificates were received, and who made choice of the Silver Medal and Ten Guineas.

A Plate and Description of the Drill-Machine, used in sowing the Turnip-Seed, is annexed, and the Machine is placed in the Repository of the Society.

SIR,

RESIDING in a country in which the Turnip-crop is very deservedly considered as the basis of its husbandry, I have, for some time, directed my attention, and made some experiments, relative to the improvement of the cultivation of that valuable vegetable; conceiving that in whatever degree I could more advantageously produce Turnips, or, when produced, could provide for a more economical expenditure of the crop, I might fairly be regarded as in the same degree promoting the general and lasting interests of the community. With this view I have made repeated trials, to ascertain "*The comparative advantage of the Drill or Broad-cast method, in the Cultivation of Turnips;*" and as the result of an experiment which I made last year, has not only been satisfactory to myself, but also to all who have witnessed the effects of it, I am induced to offer myself a candidate for the Premium held out by the Society for the Encouragement of Arts, &c.

But, before I proceed to a detail of my experiments, I think it right to observe that I have, *by way of preparation for Turnips*, given my land a *deeper* ploughing in the winter, than is customary with the neighbouring farmers. For this purpose I make use of a Scotch foot-plough; and I think that by *such* ploughing I bring land into action, which has been for some time *dormant*; and which is therefore better suited to the Turnip, than land which has been exhausted by the production of other crops. In every other respect my previous management of my land corresponds with the common practice of my neighbours.

My land *(a field of nine statute acres)*, being thus prepared, instead of sowing the Turnips *Broad-cast*, in the usual method, I invented a Drill for this purpose, simple in its construction, and of easy management. It consists of a tin box, in the shape of a barrel, affixed to the axis of a wheel about twenty-two inches in diameter, vertical with the same, and, in its revolutions, dropping the seed through small apertures in the middle of the barrel. The holes through which the seed falls, are distant from the wheel about fourteen inches. *(See the engraving and description thereof annexed)*.

I began by having the tops of the different ridges set out with the common Norfolk *two-horse plough*: and, when the same plough took up the furrow next to the top, I immediately followed with my Drill, and dropped the seeds upon the fresh mould the instant it was turned up. I was then followed by a one-horse plough, the over-shot mould of which as quickly buried the seeds. I was thus enabled to sow my seeds as fast as the land was ploughed, and to deposit them in regular and strait rows, at equal distances of about eighteen inches; after which I harrowed or rolled my land, in the same direction in which it was ploughed: and the consequence has been that my crop has grown as regularly as a gardener could plant cabbages. Nearly six acres of my field were thus drilled, and on the same day (in the third week of June) the remainder of the field, or something more than three acres, was sown Broad-cast, after the usual practice of the country, and precisely at the same time when the farmers around me were sowing their lands in a similar manner.

In the course of my observations on the Turnip-crop, I had frequently lamented, that when the crop was indeed abundant, the advantages derived from its expenditure were far from correspondent; because no effectual method has yet been adopted, to protect the Turnips from the severity of a winter's frost. This, in the common method of *Broad-cast* sowing, I considered as impracticable, and therefore resolved to attempt it in my drilled crop; and, in that crop, I have been enabled, by pulling up the alternate rows, to leave regular rows about a yard apart; and have had the land so ploughed, with a one-horse plough, as to mould up the Turnips, on each side, most effectually, and to assume the appearance of what is called *two-furrow work.* I have therefore half my crop so buried, as to lessen very materially, if not absolutely to prevent the danger arising from the frequently fatal effects of a cutting frost.

I am truly happy that the mildness of the present season prevents my speaking with greater confidence, as to the success of this part of my experiment, though the very complete manner in which the Turnips are now buried, leaves me without much doubt but that it will fully answer my expectations. Many very experienced farmers, who have witnessed my proceedings, honour them with their entire approbation, and look upon my method of protecting my plants as a grand discovery, in the management of the Turnip-crop. I am certainly aware that I am not the first person who has drilled Turnips; but I know of no one who has before done it in so simple a manner—in a manner attended with less expence—in a manner admitting of so much ease, in future operations for the defence of the plants—or in a manner more likely to be clearly understood by all who may be desirous of making similar experiments. Of the superior produce of the drilled crop over the broad-cast, on equal quantities of land, every experiment that I have made has most powerfully convinced me; and I have the universal opinion of all who have viewed my present crop, to confirm my sentiments. It has been observed by Mr. Kent, in his General View of the Agriculture of the County of Norfolk, that the ground does not relish Turnips so well as formerly: and be he supposes (in my opinion with much justice) that the present comparative ignorance of the use of Turnips amongst the Hanoverians, has arisen from the ground in that country being injured by repeated crops of them. It is certainly a very obvious truth, that Turnips will grow in the greatest abundance on land not accustomed to bear them: but it has frequently occurred to me, that one material reason of failure in a crop of Turnips sown broad-cast, has arisen from the seed not being sown soon enough after the plough; as I have, in numberless instances, taken notice of Turnips vegetating very partially, when only a few furrows have been ploughed between one sowing and another: and, in such cases, I have always thought that, if the seed could have been deposited immediately after the plough, it would not have failed to grow uniformly. I trust it will be found that my experiment powerfully tends to confirm this conclusion.

Of the following advantages, attending my method of drilling Turnips, I am satisfactorily persuaded:—In a dry time, as was the case last season, the seed, by being immediately dropped upon the fresh turned-up mould, has consequently an increased probability of successful vegetation. By being buried somewhat deeper than in the broad-cast method, it receives more moisture in its infant state of vegetation; and by having, if I may so say, new hold of the earth, is less liable to injury, from the effects of continued drought. In confirmation of these persuasions I must state, that Turnips sown on the same day, in the same field, broad-cast, on land in every other respect treated previously in the same way, have not produced one half or one third of a crop, and that the same has been very generally the case with Turnips sown broad-cast; but that every row of my drilled plants has succeeded to admiration. The advantages in the subsequent management of the crop, I have already spoken of. If therefore it be desirable to grow Turnips to advantage; if it be desirable to protect them when grown, and by such protection be enabled to give Stock, sound, uninjured Turnips, instead of what may be more than half-rotten, or frost-nipt almost to putrefaction; I would willingly flatter myself that the Society for the Encouragement of Arts will be convinced that, as far as any conclusion can be drawn from a single experiment in favour of one method rather than another, I have, beyond dispute, established the superiority of the Drill method of cultivating Turnips. And as, in addition thereto, I have in part effected what seems to me the object of the Society, in the latter part of the *Nota bene* subjoined to Premium 95, the preservation of Turnips upon the ground when grown, I am induced to hope that the Society will think me entitled to the Premium for which I am a candidate.

Of my previous experiments I am not able to furnish the Society with any satisfactory particulars; yet I would by no means omit to declare, that each has been the mean of persuading me, that the Broad-cast method of cultivating Turnips can never be so advantageous as that of the Drill, when properly managed; and I have much satisfaction in assuring the Society, that, from the extraordinary success of my last year's experiment, many of my neighbours have expressed a resolution to drill, and to protect their Turnips for the time to come. Any other particulars into which the Society may be inclined to enquire, will be answered with readiness and pleasure by, Sir,

Your obedient servant,
T. C. Munnings.

P. S. I beg leave to observe, in addition to the advantages I have before stated, that my drilled plants growing in such very strait and equidistant rows, any noxious weeds, such as *charlock*, *thistles*, or *red-weed*, may be destroyed in the infant state of the plants, by hoeing the intermediate spaces; that when the alternate rows are removed, and the land ploughed for the defence of the remaining rows, it receives most of the benefits of a winter's frost, and is very much forwarded in preparation for the barley-crop; and that, above all, from my complete success, I have roused a spirit of emulation in the cultivation of turnips, among the farmers of the county of Norfolk.

With regard to my Turnips it would be easy to multiply Certificates, and be diffuse in my observations, because no agriculturist has viewed them without being surprised both at the abundance of the crop (considering the quality of the my land), and at the very obvious simplicity of my management of it, from beginning to end. I shall only farther observe, that it is now in my power to sow my seed at equal distances of nine, eighteen, twenty-seven, thirty-six inches, or at any given distance of inches, of which nine are an aliquot part; and that I consider this as no trifling convenience.

I am, SIR,
Your obedient servant,
T. C. MUNNINGS.

East Dereham, Norfolk,
March 12, 1801.

Mr. CHARLES TAYLOR.

SIR,

SINCE I wrote to you on the subject of my drilled Turnips, I have been powerfully struck with some advantages of the drill method, which I now beg permission to state to you.

In a part of my field from which the alternate rows have not yet been taken, I have, with very great effect, used the hoe-plough, and have not only cut and destroyed whatever weeds were growing between the rows, but have also partially moulded up the apples of the Turnips; and I am induced to believe that even so partial a moulding up, executed in the autumnal months, would have a strong tendency to protect the plants, to facilitate a more complete moulding-up when part of the crop is removed, and to admit the full benefit resulting from the exposure of the earth to a winter's frost. I am persuaded that such use of the hoe-plough serves likewise to retain necessary moisture, and to produce future pulverization with much less than common labour. But I have more particularly noticed the very superior verdure of the moulded-up plants, compared with what are not so, and with the larger and almost uninjured tops of the former, in comparison with the latter; for, during some late frosts, the effects of which were very perceptible in the exposed plants, those moulded up have continued to grow, and to branch luxuriantly, with all the vigour of vernal vegetation. I attribute this to the bulbs of such plants not having their juices stagnated by the keenness of the weather.

As I am anxious to have this subject fully submitted to the Society for the Encouragement of Arts, &c. allow me to say, that I consider my Drill for Turnips as much superior to any other, from the single circumstance of its depositing the seed so *instantly* after the plough, as entirely to preserve the good effects of the first evaporation; and that I conceive such evaporation produces the uniform vegetation of such minute seeds. So remarkably uniform was the vegetation last year, that in the six acres of my drilled plants, I believe there was not a deficiency of six square yards; though on three acres of broad-cast, before rain fell, not one half, perhaps not one third part of the seeds vegetated. I am indeed fully persuaded that the Drill method, in the cultivation of Turnips, will in all seasons be superior to the Broad-cast; but that the very great and striking difference between the two methods will most effectually be perceived in a season of uncommon drought; and it is for this reason that I am solicitous to procure for the Drill method an extensive and impartial trial, that agriculturists in general may be satifactorily convinced of its important advantages.

I am, Sir,

Your obedient servant,

T. C. Munnings.

March 14, 1801.

Mr. Charles Taylor.

Certificates accompanied these letters, from Mr. James Blomfield, of Billingford; Mr. St. John Priest, Master of Scarning School; Mr. William Salter, and Mr. Daniel Reeve, of Beetley; John Tuck, and the Rev. George Preston, Curate of East Dereham; all which confirm the above accounts.

Description of Mr. T. C. Munnings's Drill Machine. Plate II. Fig. 2.

A. The wheel with an iron rim.
B. The tin barrel, or seed-box, fixed to the axis of the above wheel.
C. The aperture by which the seed is introduced into the box:—this aperture is afterwards closed by a cover.
D. A semicircular plate of tin, to prevent any dirt falling upon the seed-box.
E E. The two handles of the machine.

Plate

Plate II. Fig. 3.

F. Represents the seed-box on a larger scale.

G. The holes in the tin box, through which the seed falls upon the land.

H. Part of the axis of the wheel, to which the seed-box is fixed.

The Thanks of the Society were this Session voted to THOMAS ECCLESTON, Esq. of Scaresbrick-Hall, in Lancashire, for his Invention of an AUGRE, or PEAT-BORER, for draining Boggy Land. A Model of this Implement was presented by him to the Society, along with the following Communication, and is placed in their Repository.

SIR,

THE greatest obstacle to the effectual draining of many boggy lands, consists in the earth in the bottoms of the ditches or drains when newly cut, and more especially if made to any considerable depth, rising from the pressure of the waters contained in the bog, by which the new-cut drains and ditches are frequently so nearly filled up, as to impede the flowing of the water they were intended to carry off, and thereby rendering the work comparatively ineffectual.

There are different layers, or strata, in moss or peat lands, which will not allow the water easily to filtrate through them, yet are of so soft and spongy a nature as to rise from the pressure of the water contained in the bog.

It becomes necessary to give a free vent to the above confined water, effectually to drain such lands. This has been most successfully done by the Augre, a model of which I have herewith presented to the Society.

A common augre, or even a pole, will force a passage, and give vent to the water for a short time; but owing to the peat being only pressed sideways, and not cut out, the parts soon join again, and the passage of the water of course becomes completely obstructed; but by means of this Augre, a cylindrical column of peat of six inches diameter will be clearly cut out and taken thence, and a free passage maintained for a very considerable space of time.

The first experiment made, produced a clear augre-hole of the above dimensions, four yards in depth, in one hour; and the water, which had been pent up in the bog, rose above the level of the bottom of the ditch, from four to six inches; and the bottom of the ditch, which was previously very soft, and had begun to swell and rise, in a few days became more firm and solid, and this in so great a degree, that when cleared it remained without swelling or rising in the least. It will considerably reduce the expense of draining such lands, by rendering them so firm as to cause the first end-drains to stand.

The most proper depth to bore, depends on the situation. Where the moss lands lie low, and are in danger of being flooded, no greater depth than what is absolutely necessary for draining the surface should be bored, as, by deep boring, the land may be sunk so low as to be liable to inundation.

I am, Sir,

Your most obedient servant,

Thomas Eccleston.

Scaresbrick, Lancashire,
May 25, 1801.

Mr. Charles Taylor.

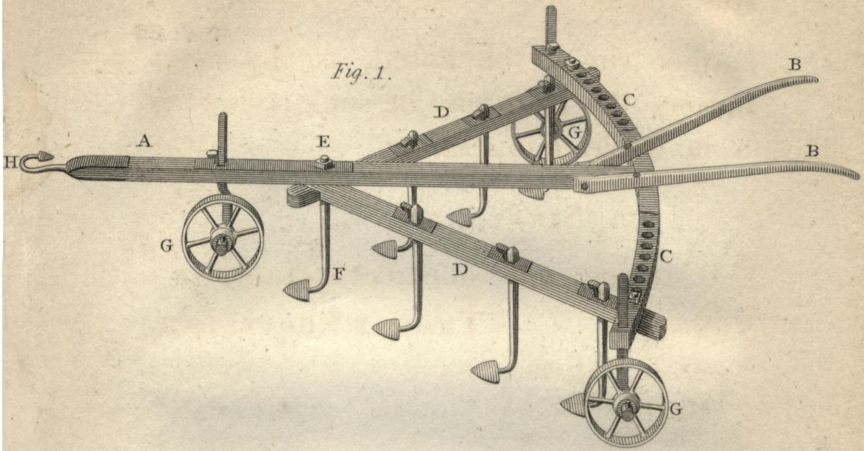
Description of Mr. Eccleston's Peat-Borer. Plate II. Fig. 4.

A. The cutter of the borer, which penetrates the peat.
B. The body of the borer, six inches in diameter.
C. The aperture through which the peat introduced by boring is drawn out.
D. A portion of the iron bar of the borer, to the upper part of which a cross handle is to be fixed.

The

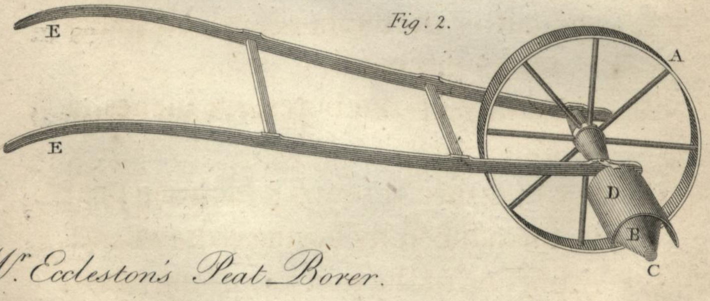
Mr. Lester's Cultivator.

Fig. 1.



Mr. T. C. Munning's Drill Machine.

Fig. 2.



Mr. Eccleston's Peat Borer.

Fig. 4.

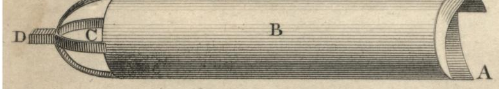
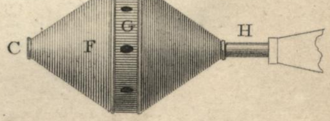


Fig. 3.



Lowry Sculp.

The GOLD MEDAL was this Session adjudged to NICHOLAS ASHTON, Esq. of Woolton-Hall, near Liverpool, for planting ONE HUNDRED and THIRTY-THREE ACRES of WASTE MOOR LAND. The following Account and Certificates were received from him.

SIR,

THE Forest of Delamere, in the county of Chester, is of great extent; and from old records appears to have produced much valuable timber, which is nearly all destroyed; and the land, which is now productive of little more than heath, affords but a scanty provision for a few sheep and rabbits.

The soil is in most parts extremely thin; and under it is a great depth of sand, intermixed with gravel.

From the timber it has produced, I was naturally led to expect, with care and proper management, trees might be again raised, which may prove beneficial not only to the planter, but, if executed on a great scale, to the kingdom at large; and having waste land adjoining to the forest, of the same quality, I determined, in the summer of the year 1795, to try the experiment. Accordingly, for that purpose, I enclosed one hundred and thirty-three acres of land in two lots, and surrounded them with posts and double-railing. I engaged Messrs. Dickson and Sons, nurserymen, to plant the same with forest-trees; which they completed the winter following, very much to my satisfaction, agreeably to the Certificate sent herewith, to which I beg leave to refer. It may be proper to add, that the plantation was surrounded with a ditch and copse, and the latter planted, below the railing, with white thorns. To make the guard still more effectual, about four feet from the railing, within the inclosures, I directed a line of French gorse to be sowed in a drill; and having built a lodge upon the premises for one of my labourers, I ordered him to devote his whole time and attention to preserve the fences, and protect the trees from injury by sheep, or otherwise. This, I have the pleasure to say, he has diligently performed; and there is every appearance of the plantation succeeding according to my wishes.

From the very thin layer of vegetable soil, Messrs. Dickson's were of opinion that it would be best not to plough the land; but after burning the heath, at the close of the summer, to plant the trees that were small near the surface, expecting they would flourish more than if planted in the sand. This, however, proved not to be the case; for the matted roots of the heath were the first year detrimental to the young plants; whereas those which were planted on sand beds, from which the gravel had been screened, took root immediately, and are easily perceived from the rest of the plantation.

If this experimental proof of success in planting timber-trees on very barren soils, should be an inducement to the public, or individuals, to pursue the same upon a large scale, it will give me very particular pleasure, and, I trust, be of great national advantage.

I am, Sir,

Your most obedient servant,

Nicholas Ashton.

N. B. I beg leave to add, that the flourishing state of my plantations has induced other gentlemen, in the county of Chester, to plant upon similar soils.

Woolton-Hall,
October 13, 1800.

THIS is to certify that Archibald Dickson and Sons, nurserymen, of Hassendeanburn, near Haurick, Roxburgshire, Scotland, by directions from Nicholas Ashton, Esq. planted, during the months of November and December, 1795, four hundred and eighty-seven thousand and forty forest-trees, viz.

Scots Firs - - -	242,600
Larches - - -	181,200
Ashes - - -	4,800
Oak - - - -	16,200
Sycamore - - -	15,000
Elm - - - -	7,200
Beech - - -	18,060
Tree Willow - -	1,200
Alder - - -	600
Laburnum - -	60
Weeping Birch - -	60
Mountain Ash - -	30
Spanish Chesnuts -	30
Total	487,040

And the said trees were planted upon one hundred and thirty-three acres of Waste Land, in the township of Weaverham, and adjoining to the Forest of Delamere, in the county of Chester.—And I ARCHIBALD DICKSON do further certify, that I have this day, together with the Rev. John WILLAN, of Weaverham, and Mr. GEORGE OKELL, steward for Nicholas Ashton, Esq. visited and carefully examined the said plantation, and find the trees in a promising and flourishing condition; and to the best of our judgment we conceive, that not more than one twelfth part of the whole has perished.

ARCHIBALD DICKSON.
GEORGE OKELL.
JAMES WILLAN.

The Thanks of the Society were this Session voted to EDWARD JONES, Esq. of Wepre-Hall, in Flintshire, for the following Communication, on the Destruction of the GRUB of the COCKCHAFER.

SIR,

THE Society having directed their attention to the preservation of herbage from noxious insects, and among others the Cockchafer, by destroying its Grub; I beg leave to submit a few observations on the subject for their consideration.

The Grubs of the Cockchafers (or brown beetles) are white, about an inch in length, and of the thickness of a turkey's quill. When disturbed they contract their length, and their bodies dilating, appear like lumps of white fat,* somewhat oval.

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* Hence the British name "Earth-Lard."

They inhabit sandy and light loamy soils, lie from about two to six inches deep, and may be found in spring, by paring off the sods.

This place was much infested by brown beetles; but about twelve years ago, some labourers removing a bank of earth, exposed a bed of Grubs, several paces in length. Many of them were scattered among the fallen soil; and one of the men proposed to strip the surface of the bank, which being done, the Grubs were seen lying in irriguous channels, as if the parent insects had dropped the eggs moving in various directions.

The same man informed me that they were the favourite food of moles; and he desired me to observe an end of the bank not stripped (being covered with mole hills); " for there no beetle grubs would be found." When opened, his remark proved true:—the moles had traced all the labyrinths of the grubs.

My

I took the hint for the preservation of my foliage, and have ever since protected the race of moles. The brown beetles gradually decreased, and are now rarely seen here. I have not observed more than one or two stragglers in the two last springs.

Some notice of the habits of moles may be acceptable to the Society, as it has been said " that they penetrate deep into the earth, in dry weather; rarely quit their subterraneous dwellings, and have few enemies ;"—and " that they do great mischief in gardens and corn-grounds."

I have always found that in hay and pasture grounds, as soon as the grass is high enough to cover them, they run upon the surface, where they find their food in the numerous caterpillars and insects which in the early part of the summer crawl out of the earth; and they continue above ground till the harvest. They are frequently cut by the scythe; and I have seen them at various times come out of deep hay grass into places recently mown, and, perceiving their exposure, endeavour to conceal themselves in the shorn grass.

I have also often seen moles on very close mown grass, and bare spots in pasture land, plunge, when alarmed, among the roots; following their path (which was discernible by the heaving of the surface), I have forced them out occasionally, to try the depth of the covering, which was only a few shreds of roots.

There are two circumstances that may oblige moles sometimes to penetrate deeply:—disturbed soils in summer, such as in gardens; and ploughed light lands, where the moles delve in pursuit of worms; and, in their course, they must unroot and destroy some plants; but a vigilant gardener and husbandman will prevent much damage.

The other cause of their digging deep is frost, which they avoid, or it would kill them. I have found them in winter, in peat soil, two and three feet below the surface; and in the hard frost of 1794-5 (cutting deep trenches to separate grounds), I found moles several mornings, that had worked through and fallen into the trenches, frozen to death.

Their summer emersion is proved by the birds of prey: they destroy great numbers of moles. This year there were taken out of one kite's nest twenty-two moles, and out of another fifteen, some of which were putrid; besides many frogs and unfledged birds.

The rapacity of the kites shews that they are destructive enemies to the moles, which, if moles are serviceable to man, should be known, that he may stay his arm.

Moles are frequently found dead upon the grass in summer, with marks of having been bitten, as if to suck their blood, but with no part of their bodies consumed. This, I suppose, is done by weasels; and the following (not very common) occurrence, which happened in the summer of 1789, tends to prove it:—

A kite was observed rising from the ground with some prey, and instead of flying to an adjoining wood, he soared almost perpendicularly. After remaining a short time stationary, he came gradually down, with his wings extended and motionless, and dropt very near the place from which he had risen *.

Several persons who were near, and saw the flight and descent, ran immediately to the spot, and a weasel darted from the kite, which they found dead; and they discovered, on examination, that the kite had been bit in the throat, and

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* A similar circumstance was mentioned in the Chester papers, three or four years ago.

and bled to death. Near it they found a dead mole, yet warm, which was bitten in the neck; and they concluded that the weasel had caused the death of both.

In several parts of the kingdom where I have met with a great number of brown beetles, moles were regularly destroyed: and in Staffordshire, being shown several large trees covered by beetles, and totally defoliated, I enquired whether they destroyed the moles? The answer was, that they did, or they should be overrun with them.

The loss of foliage not being of great consequence to the farmer, he is satisfied that his turkeys make him amends in other respects, by eating the brown beetles, of which they are very fond, and which they swallow voraciously.

A gentleman informed me lately, that rooks also eat the beetles.

But these means are confined to the winged beetle. It appears to me that the mole is the only certain destroyer of the grub.

My hay and pasture grounds are, every spring, thickly studded with mole hillocks. They are scattered in the usual manner; and when the grasses are up, the moles cease to work, and scarce a hillock appears till after harvest.

I remain, SIR,

Your most obedient servant,

EDWARD JONES.

Wepre-Hall,
December 24, 1799.

MR. CHARLES TAYLOR.

The SILVER MEDAL was this Session presented to Mr. JOHN HORRIDGE, of Raikes, near Bolton in the Moors, Lancashire, for the following Communication on the Preparation and Application of COMPOSTS for MANURE.

SIR,

PERMIT me to request you to lay before the Society for the Encouragement of Arts, &c. the following memorial of the improvements and experiments which I have made in a quantity of land.

In the first place, I must solicit your attention to a new and cheap method of planting potatoes, and which I never knew to be attempted by any one but myself. The following is the manner in which I tried the experiment:—A quantity of land in my farm wanted draining, and I had occasion for a large main-drain for that purpose; in the cutting thereof I found a quantity of earth, in a solid bed, resembling peat, but of a more solid substance than peat generally is. I threw it into heaps, and, after the ochery water had left it, mixed it with lime, which appeared to me to form with it an excellent manure. After this, I fallowed a field of a gravelly soil, drilled it for potatoes, and put the same quantity of this Compost into the drills, as I should otherwise have done of black dung; and the produce from eight statute acres was 864 loads, of thirteen score to the load. I then ploughed it for wheat, and had a most excellent crop; sowed it with white clover and grass seeds, and let it lie for grass: it has been, and is now, one of the best pastures in the neighbourhood. The land, before the improvement, was worth about £1. 10s. an acre, and, after taking two very great crops from it, is now worth about £3. per acre. The general opinion of the country was against the use of lime, in the setting of potatoes: it has, however, answered beyond expectation; and had I been under the necessity of procuring dung for my potatoes, instead of this Compost, it would have cost me six times as much money.

Having made the above experiment with potatoes and wheat, I was inclined to try the same sort of Compost upon grass-lands. In a little valley between two small hills in my farm, I found a very large bed of peat, composed of decayed vegetable substances, which was boggy, and in some places upwards of nine feet in depth. This I drained and drew off the stagnant water with which it was filled: it appeared to me the whole bed, in consequence of being laid dry, had fermented; for when we afterwards cut it, we found it converted to very fine mould. I caused it to be trenched to the next stratum, which was marl, and mixed it with lime hot from the kiln; but very soon found that I must slack the lime before mixing, or it would have burnt it to ashes, by undergoing a fresh degree of fermentation. The quantity I mixed was nine thousand tons, with 1327 horse-loads of lime, which cost me about £160, and I gave one penny per cubic yard for the trenching and mixing: and having about thirty acres of gravelly soil, I begun in October to cover my land with this Compost, which, in a very short time, proved advantageous; for the grass began to spring as if it had been April, and soon produced a very luxuriant pasture of about four acres in extent. This I covered first and turned into it eight milch cows, about the 15th of December. They fed thereon till the 1st of March, and gave me a very great quantity of milk and butter; and the butter was rich and yellow, like spring butter. The cows, while in this pasture, had very little hay, and that during the night, of which they would eat only a very few pounds. Since I took out my cows, I have pastured the land with twenty in-lamb ewes, of the large white-faced or Malham breed.—They are now pasturing; and I doubt not but it would feed sheep very fat. I have now covered about twenty-six acres more, which promise to be as successful as the other, and amounting to, in the whole, thirty acres. This, prior to the improvements, was worth £2 : 10*s.* per acre, and is now worth £4 per acre.

This Compost is, I believe, equal to the best manure I could obtain, and the advantage arising from peat compost with lime, when laid upon gravel, sandy, or clay soils, is almost invaluable. The quantity of this Compost which I have now ready prepared, together with what I have used, amounts to nine thousand tons, which has been raised since last summer; and the total expense is £530. The quantity per acre is one hundred and forty tons, which cost me about £8 per acre. Had it been dunged the common way, it would have cost me sixteen guineas per acre, and would not have answered so well. The remainder of my Compost is upwards of four thousand tons; I have thirty acres more to cover, the greatest quantity of which I intend to plant with potatoes. By the statement above, you will see the annual value of the land at present, and what its value was prior to those improvements.

I remain, SIR,
Yours respectfully,
JOHN HORRIDGE.

Raikes, near Bolton le Moors,
Lancashire.

Mr. CHARLES TAYLOR.

Certified the 11th of March, 1801, by
THOMAS BANCROFT, Vicar of Bolton.
RA. FLETCHER. PETER SMITH.